

Amendments to the Claims:

The following claims will replace all prior versions of the claims in this application (in the unlikely event that no claims follow herein, the previously pending claims will remain):

1. (Currently Amended) A heat-curable epoxy resin composition comprising an epoxy resin and an oligomeric and/or polymeric impact modifier;

wherein:

- (a) the impact modifier is a polyester, a polyamide, a polyurethane, a polyesteramide, a copolymer formed from a polyester and polyamide, or a polyurethane formed from a polyester;
- (b) the impact modifier comprises a residue of at least one dimer fatty acid and/or dimer fatty diol;
- (c) when the impact modifier is a polyester, ~~the polyol component of said polyester is formed from components consisting of~~ consists of residues ~~derived from:~~
 - i) dimer fatty acids and/or non-dimeric fatty acids;
 - ii) polyols having a molecular weight of between 50 and 200; and/or
 - ii) dimer fatty diols;
- (d) the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier;
- (e) the weight ratio of epoxy resin:impact modifier is in the range from 1.5 to 20:1; and
- (f) the epoxy resin is a glycidyl epoxy resin.

2. (Currently Amended) A cured epoxy resin composition comprising a reaction product of an epoxy resin and an oligomeric and/or polymeric impact modifier;

wherein:

- (a) the impact modifier is a polyester, a polyamide, a polyurethane, a polyesteramide, a copolymer formed from a polyester and polyamide, or a polyurethane formed from a polyester;
- (b) the impact modifier comprises a residue of at least one dimer fatty acid

- and/or dimer fatty diol;
- (c) when the impact modifier is a polyester, the ~~polyol component of said polyester~~ is formed from components consisting of ~~consists of residues derived from:~~
- i) dimer fatty acids and/or non-dimeric fatty acids;
 - ii) polyols having a molecular weight of between 50 and 200; and/or
 - ii) dimer fatty diols;
- (d) the cured resin composition comprises phase-separated domains and/or particles comprising the impact modifier;
- (e) the weight ratio of epoxy resin:impact modifier is in the range from 1.5 to 20:1; and
- (f) the epoxy resin is a glycidyl epoxy resin.

3-4. (Cancelled).

5. (Previously Presented) The composition of claim 31, wherein the polyester is formed from dimer fatty acids, adipic acid, and at least one diol having a molecular weight in the range from 50 to 200.

6. (Previously Presented) The composition of claim 1, wherein the impact modifier comprises polyamide.

7. (Previously Presented) The composition of claim 31, wherein the impact modifier comprises in the range from 15 to 50% by weight of dimer fatty acid and/or dimer fatty diol residues.

8. (Previously Presented) The composition of claim 31, wherein the weight ratio of epoxy resin:impact modifier is in the range from 1.5 to 10:1.

9. (Previously Presented) The composition of claim 31, comprising in the range from 10 to 50% by weight of impact modifier.

10. (Previously Presented) The composition of claim 31, comprising in the range from 4 to 20% by weight of dimer fatty acid and/or dimer fatty diol residues.

11. (Previously Presented) The composition of claim 31, comprising a reaction product of an epoxy resin and a prepolymer wherein the prepolymer comprises the reaction product of an epoxy resin and the oligomeric and/or polymeric impact modifier.

12. (Previously Presented) The composition of claim 11, wherein the prepolymer comprises in the range from 20 to 60% by weight of impact modifier.

13. (Cancelled).

14. (Previously Presented) The composition of claim 33, wherein the domains and/or particles have a mean particle diameter in the range from 0.4 to 7 μm .

15. (Previously Presented) The composition of claim 33, wherein the domains and/or particles have a mean aspect ratio in the range from 0.6 to 1.4:1.

16. (Previously Presented) The composition of claim 33, wherein less than 25% by number of domains and/or particles have a particle diameter of less than 0.5 μm .

17. (Previously Presented) The composition of claim 33, wherein less than 20% by number of domains and/or particles have a particle diameter of greater than 5 μm .

18. (Previously Presented) The composition of claim 33, wherein the interfacial work of adhesion, G_a is greater than 70 Jm^{-2} .

19. (Previously Presented) The composition of claim 33, wherein the essential work of fracture is in the range from 12 to 18 kJm^{-2} .

20. (Currently Amended) A prepolymer comprising a reaction product of an epoxy resin and an oligomeric and/or polymeric impact modifier, wherein the impact modifier is a polyester comprising: ~~a residue of a linear dicarboxylic acid having terminal carboxyl groups and a carbon chain in the range from 2 to 20 carbons atoms; and~~ from 15 to 50% by weight of a residue of at least one dimer fatty acid and/or dimer fatty diol, wherein the ~~polyol component of said polyester consists of residues derived~~ is formed from components consisting of:

- i) dimer fatty acids and/or non-dimeric fatty acids;
- ii) polyols having a molecular weight of between 50 and 200; and/or
- ii)iii) dimer fatty diols; and

wherein said prepolymer comprises in the range from 40 to 80% by weight of the epoxy resin and 20 to 60% by weight of the impact modifier.

21. (Previously Presented) A cured epoxy resin composition according to claim 33 comprising phase-separated domains and/or particles comprising impact modifier, said domains and/or particles having an aspect ratio in the range from 0.7 to 1.3:1, and a mean particle diameter in the range from 0.8 to 5 μm .

22. (Previously Presented) The composition of claim 21, wherein at least 60% by number of the domains and/or particles have a particle diameter in the range from 0.8 to 5 μm .

23. (Previously Presented) The composition of claim 21, wherein less than 25% by number of domains and/or particles have a particle diameter of less than 0.5 μm .

24. (Previously Presented) The composition of claim 21, wherein less than 20% by number of domains and/or particles have a particle diameter of greater than 5 μm .

25. (Cancelled).

26. (Previously Presented) A heat-curable electronic assembly adhesive composition comprising the heat-curable epoxy resin composition according to claim 31.

27. (Previously Presented) A circuit board comprising a chip or die bonded by the cured epoxy resin composition according to claim 33.

28. (Previously Presented) A method of forming a heat-curable epoxy resin composition comprising the heat-curable epoxy resin composition according to claim 31, wherein the method comprises:

- (i) reacting the impact modifier with a first epoxy resin to form a prepolymer, and
- (ii) mixing the prepolymer with a second epoxy resin.

29. (Previously Presented) The method of claim 28, wherein the molecular weight of the first epoxy resin is less than the molecular weight of the second epoxy resin.

30. (Previously Presented) A method of assembling components, comprising:
a) interposing a heat-curable epoxy resin adhesive composition between respective surfaces of the components; and
b) curing said composition with the components in contact therewith, said adhesive composition comprising the heat-curable epoxy resin composition according to claim 31.

31. (Currently Amended) A heat-curable epoxy resin composition, comprising:
a) an epoxy resin, wherein the epoxy resin is a glycidyl resin; and
b) an oligomeric and/or polymeric impact modifier which is a polyester comprising a residue of at least one dimer fatty acid and/or dimer fatty diol, wherein the polyol component of said polyester is formed from components consisting of ~~consists of~~ residues derived from:
i) dimer fatty acids and/or non-dimeric fatty acids;
ii) polyols having a molecular weight of between 50 and 200; and/or

ii)iii) dimer fatty diols;-and

wherein the composition is capable of phase separation, upon curing, to form phase-separated domains and/or particles comprising the impact modifier and wherein the weight ratio of epoxy resin:impact modifier is in the range from 1.5 to 20:1.

32. (Cancelled).

33. (Currently Amended) A cured epoxy resin composition comprising a reaction product of:

- a) an epoxy resin, wherein the epoxy resin is a glycidyl resin; and
- b) an oligomeric and/or polymeric impact modifier which is a polyester comprising a residue of at least one dimer fatty acid and/or dimer fatty diol, wherein the ~~polyol component of said polyester~~ is formed from components consisting of ~~consists of residues derived from:~~
 - i) dimer fatty acids and/or non-dimeric fatty acids;
 - ii) polyols having a molecular weight of between 50 and 200; and/or
 - ii)iii) dimer fatty diols;-and

wherein said composition comprises phase-separated domains and/or particles comprising the impact modifier and wherein the weight ratio of epoxy resin:impact modifier is in the range from 1.5 to 20:1.

34. (Cancelled).

35. (Currently Amended) The heat-curable epoxy resin of claim 31, wherein said ~~polyester comprises polyol residues derived from polyols selected from the group consisting of~~ comprise: pentaerythritol;-glycerol;-trimethylolpropane;-ethylene glycol;-diethylene glycol;-1,3-propylene glycol;-dipropylene glycol;-1,4-butylene glycol;-1,6-hexylene glycol;-neopentyl glycol;-3-methyl pentane glycol;-1,2-propylene glycol;-1,4-bis(hydroxymethyl)cyclohexane;or-(1,4-cyclohexane-dimethanol)-and dimer fatty diols.

36. (Currently Amended) The composition of claim 35, wherein said polyester comprises ~~polyol residues derived from polyols selected from the group consisting of~~ comprise: ethylene glycol; - diethylene glycol; - 1,4-butylene glycol; - 1,6-hexylene glycol; or - neopentyl glycol ~~and dimer fatty diols.~~

37. (Currently Amended) The composition of claim 35, wherein said polyester comprises ~~polyol residues derived from polyols selected from the group consisting of~~ comprise: 1,4-butylene glycol; - 1,6-hexylene glycol; or - and neopentyl glycol.

38. (Currently Amended) The cured epoxy resin composition of claim 33, wherein said polyester comprises ~~polyol residues derived from polyols selected from the group consisting of~~ comprise: pentaerythritol; - glycerol; - trimethylolpropane; - ethylene glycol; - diethylene glycol; - 1,3-propylene glycol; - dipropylene glycol; - 1,4-butylene glycol; - 1,6-hexylene glycol; - neopentyl glycol; - 3-methyl pentane glycol; - 1,2-propylene glycol; - 1,4-bis(hydroxymethyl)cyclohexane; or - (1,4-cyclohexane-dimethanol) ~~and dimer fatty diols.~~

39. (Currently Amended) The composition of claim 38, wherein said polyester comprises ~~polyol residues derived from polyols selected from the group consisting of~~ comprise: ethylene glycol; - diethylene glycol; - 1,4-butylene glycol; - 1,6-hexylene glycol; or - neopentyl glycol ~~and dimer fatty diols.~~

40. (Currently Amended) The composition of claim 38, wherein said polyester comprises ~~polyol residues derived from polyols selected from the group consisting of~~ comprise: 1,4-butylene glycol; - 1,6-hexylene glycol; or - and neopentyl glycol.

41-46. (Cancelled).

47. (Previously Presented) The composition of claim 1, wherein the impact modifier comprises polyamide or polyurethane.

48. (Previously Presented) The composition of claim 2, wherein the impact modifier comprises polyamide or polyurethane.

49. (Currently Amended) The composition of claim 57-45, wherein the impact modifier is formed from dimer fatty acids, adipic acid, and at least one diol having a molecular weight in the range from 50 to 200.

50. (Previously Presented) The composition of claim 49, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of 1,4-butylene glycol, 1,6-hexylene glycol and neopentyl glycol.

51. (Currently Amended) The composition of claim 35-46, wherein the polyester is formed from dimer fatty acids and adipic acid.

52. (Previously Presented) The composition of claim 51, wherein said polyester comprises polyol residues derived from polyols selected from the group consisting of 1,4-butylene glycol, 1,6-hexylene glycol and neopentyl glycol.

53. (Previously Presented) The composition of claim 1, wherein the impact modifier comprises a copolymer formed from a polyester and polyamide or a polyurethane formed from a polyester.

54. (Previously Presented) The composition of claim 2, wherein the impact modifier comprises a copolymer formed from a polyester and polyamide or a polyurethane formed from a polyester.

55-56. (Cancelled).

57. (New) The heat-curable epoxy resin composition of claim 31, wherein the polyester impact modifier comprises a ratio of dimer fatty acid residues to non-dimeric fatty acid residues in the range from 30 to 70%:30 to 70% by weight of the total dicarboxylic acids.